

G is a bond selected from alkane, alkene or acetylene, wherein if  $m = 0$ , at least one G is not alkane;

wherein said test chamber further comprises at least one second measuring electrode; and

b) a voltage source electrically connected to said test chamber; and

c) an electronic detector.--

#### REMARKS

Claims 20, 25-31 are pending. Claims 22 and 23 have been canceled. Claim 20 has been amended to incorporate dependent claim 22. Claim 31 is newly added. Support for new claim 31 is found in cancelled claim 23 and pending claim 20.

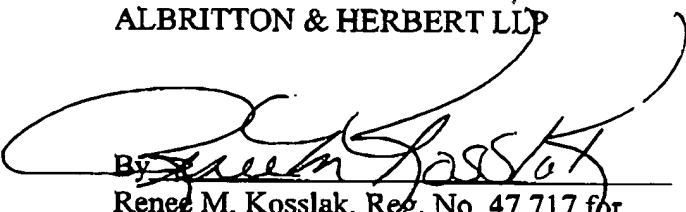
Attached hereto is a marked-up version of the changes made to the claims by the "Restriction and Amendment". The attached page is captioned "Version with markings to show changes made."

Please direct any calls in connection with this application to the undersigned at (415) 781-1989.

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Respectfully submitted,

FLEHR HOHBACH TEST  
ALBRITTON & HERBERT LLP

By   
Renee M. Kossak, Reg. No. 47,717 for  
Robin M. Silva Reg. No. 38,304

Four Embarcadero Center - Suite 3400  
San Francisco, California 94111-4187  
Tel.: (415) 781-1989  
Fax: (415) 398-3249  
1078233.RMK

**"VERSION WITH MARKINGS TO SHOW CHANGES MADE"**

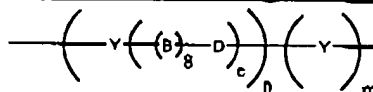
Claim 20 has been amended as follows:

20. (Thrice Amended) An apparatus for the detection of a non-nucleic acid target analyte in a test sample, comprising:

a) a test chamber comprising an array of electrodes each comprising:

i) a self-assembled monolayer; and

ii) a binding ligand covalently attached to said electrode via a conductive oligomer, wherein said conductive oligomer has the formula:



wherein

Y is an aromatic group;

n is an integer from 1 to 50;

g is either 1 or zero;

e is an integer from zero to 10; and

m is zero or 1;

wherein when g is 1, B-D is selected from acetylene, alkene, substituted alkene, amide, azo, esters, thioesters, -CH=N-, -CR=N-, -N=CH- and -N=CR-, -SiH=SiH-, -SiR=SiH-, -SiR=SiH-, and -SiR=SiR-, -SiH=CH-, -SiR=CH-, -SiH=CR-, -SiR=CR-, -CH=SiH-, -CR=SiH-, -CH=SiR-, and -CR=SiR-; and

wherein when g is zero, e is 1 and D is [preferably] carbonyl, or a heteroatom moiety, wherein the heteroatom is selected from oxygen, sulfur, nitrogen, silicon or phosphorus;

wherein said test chamber further comprises at least one second measuring electrode; and

b) a voltage source electrically connected to said test chamber; and

c) an electronic detector.

Claims 22 and 23 have been cancelled.

Claim 25 has been amended as follows:

25. (Thrice Amended) An apparatus according to claim 20, [or] 30, or 31 wherein said self-assembled monolayer comprises insulators.

Claim 26 has been amended as follows:

26. (Thrice Amended) An apparatus according to claim 20, [or] 30, or 31 wherein said self-assembled monolayer comprises conductive oligomers.

Claim 27 has been amended as follows:

27. (Thrice Amended) An apparatus according to claim 20, [or] 30, or 31 wherein said self-assembled monolayer comprises insulators and conductive oligomers.

Claim 28 has been amended as follows:

28. (Thrice Amended) An apparatus according to claim 20, [or] 30, or 31 wherein said binding ligand is a protein.

Claim 29 has been amended as follows:

29. (Twice Amended) An apparatus according to claim 20, [or] 30, or 31 further comprising a processor coupled to said electrodes and configured to receive an output signal.

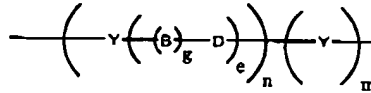
## Appendix of Pending Claims

20. (Thrice Amended) An apparatus for the detection of a non-nucleic acid target analyte in a test sample, comprising:

a) a test chamber comprising an array of electrodes each comprising:

i) a self-assembled monolayer; and

ii) a binding ligand covalently attached to said electrode via a conductive oligomer, wherein said conductive oligomer has the formula:



wherein

Y is an aromatic group;

n is an integer from 1 to 50;

g is either 1 or zero;

e is an integer from zero to 10; and

m is zero or 1;

wherein when g is 1, B-D is selected from acetylene, alkene, substituted alkene, amide, azo, esters, thioesters, -CH=N-, -CR=N-, -N=CH- and -N=CR-, -SiH=SiH-, -SiR=SiH-, -SiR=SiH-, and -SiR=SiR-, -SiH=CH-, -SiR=CH-, -SiH=CR-, -SiR=CR-, -CH=SiH-, -CR=SiH-, -CH=SiR-, and -CR=SiR-; and

wherein when g is zero, e is 1 and D is [preferably] carbonyl, or a heteroatom moiety, wherein the heteroatom is selected from oxygen, sulfur, nitrogen, silicon or phosphorus;

wherein said test chamber further comprises at least one second measuring electrode; and

b) a voltage source electrically connected to said test chamber; and

c) an electronic detector.

25. (Thrice Amended) An apparatus according to claim 20, ~~30~~, or 31 wherein said self-assembled monolayer comprises insulators.

26. (Thrice Amended) An apparatus according to claim 20, ~~30~~, or 31 wherein said self-assembled monolayer comprises conductive oligomers.

27. (Thrice Amended) An apparatus according to claim 20, ~~30~~, or 31 wherein said self-assembled monolayer comprises insulators and conductive oligomers.

28. (Thrice Amended) An apparatus according to claim 20, ~~30~~, or 31 wherein said binding ligand is a protein.

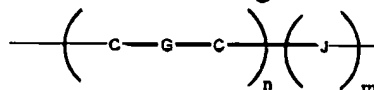
29. (Twice Amended) An apparatus according to claim 20, ~~30~~, or 31 further comprising a processor coupled to said electrodes and configured to receive an output signal.

~~30.~~ An apparatus for the detection of a non-nucleic acid target analyte in a test sample, comprising:

- a) a test chamber comprising an array of electrodes each comprising:
- i) a self-assembled monolayer; and
  - ii) a binding ligand covalently attached to said electrode via an insulator;
- wherein said test chamber further comprises at least one second measuring electrode; and
- b) a voltage source electrically connected to said test chamber; and
- c) an electronic detector.

31. (New) An apparatus for the detection of a non-nucleic acid target analyte in a test sample, comprising:

- a) a test chamber comprising an array of electrodes each comprising:
- i) a self-assembled monolayer; and
  - ii) a binding ligand covalently attached to said electrode via a conductive oligomer wherein said conductive oligomer has the formula:



wherein

n is an integer from 1 to 50;

m is 0 or 1;

C is carbon;

J is carbonyl or a heteroatom moiety, wherein the heteroatom is selected from the group consisting of oxygen, nitrogen, silicon, phosphorus, sulfur; and

G is a bond selected from alkane, alkene or acetylene, wherein if m = 0, at least one G is not alkane;

wherein said test chamber further comprises at least one second measuring electrode; and

- b) a voltage source electrically connected to said test chamber; and
- c) an electronic detector.